

WHAT IS CLAIMED IS:

1 1. For use in a wireless communications system, a
2 power amplification system for avoiding performance
3 degradation, system shutdown or damage comprising:

4 a power amplifier amplifying wireless signals to
5 be transmitted;

6 a voltage converter supplying power to the power
7 amplifier;

8 at least one monitoring unit detecting occurrence
9 of a predetermined data pattern within the wireless signals
10 to be transmitted, wherein the predetermined data pattern
11 is likely to cause an undesirable drop in an output voltage
12 from the voltage converter; and

13 at least one control unit lowering an output
14 power level of the power amplifier for a specified period
15 in response to occurrence of the predetermined data pattern
16 within the wireless signals to be transmitted.

1 2. The power amplification system as set forth in
2 Claim 1 wherein the predetermined data pattern further
3 comprises:

4 a data sequence within a single timeslot or data
5 packet; or

6 a combination of one or more data sequences
7 across successive timeslots or data packets.

8 3. The power amplification system as set forth in
9 Claim 2 wherein the at least one monitoring unit detects
10 the data sequence or the combination of one or more data
11 sequences.

12 4. The power amplification system as set forth in
13 Claim 1 wherein occurrence of the predetermined data
14 pattern is detected by:

15 a signal sequence; or

16 a signal sequence in combination with a voltage,
17 a current, or a combined voltage and current exceeding a
18 threshold either instantaneously or for a specified
19 duration.

1 5. The power amplification system as set forth in
2 Claim 4 wherein the at least one monitoring unit detects
3 the voltage, the current, or the combined voltage and
4 current.

1 6. The power amplification system as set forth in
2 Claim 1 wherein the at least one control unit lowers the
3 output power by a defined increment.

1 7. The power amplification system as set forth in
2 Claim 1 wherein the at least one control unit lowers the
3 output power by adjusting a power control reference
4 voltage.

1 8. The power amplification system as set forth in
2 Claim 1 further comprising:

3 a baseband modulator generating the wireless
4 signals to be transmitted; and

5 a transmission line-up unit controlling timing of
6 transmission of the wireless signals to be transmitted,

7 wherein the at least one monitoring unit and the at
8 least one control unit are each located in one or more of
9 the power amplifier, the voltage converter, the baseband
10 modulator, and the transmission line-up unit.

1 9. The power amplification system as set forth in
2 Claim 8 wherein more than one of the power amplifier, the
3 voltage converter, the baseband modulator, and the
4 transmission line-up unit include a monitoring unit or a
5 control unit.

1 10. The power amplification system as set forth in
2 Claim 1 wherein the power amplifier is specified for
3 average output power at a maximum power level rather than
4 absolute maximum peak power at the maximum power level.

1 11. A method of avoiding performance degradation,
2 system shutdown or damage in a power amplification system
3 comprising:

4 amplifying wireless signals to be transmitted
5 with a power amplifier;

6 supplying power to the power amplifier from a
7 voltage converter;

8 detecting, at least one monitoring unit,
9 occurrence of a predetermined data pattern within the
10 wireless signals to be transmitted, wherein the
11 predetermined data pattern is likely to cause an
12 undesirable drop in an output voltage from the voltage
13 converter; and

14 employing at least one control unit to lower an
15 output power level of the power amplifier for a specified
16 period in response to occurrence of the predetermined data
17 pattern within the wireless signals to be transmitted.

1 12. The method as set forth in Claim 11 wherein the
2 step of detecting occurrence of a predetermined data
3 pattern within the wireless signals to be transmitted
4 predetermined data pattern further comprises:

5 detecting a data sequence within a single
6 timeslot or data packet; or

7 detecting a combination of one or more data
8 sequences across successive timeslots or data packets.

9 13. The method as set forth in Claim 12 wherein the
10 steps of detecting the data sequence or detecting the
11 combination of one or more data sequences are performed by
12 the at least one monitoring unit.

13 14. The method as set forth in Claim 11 wherein the
14 step of detecting occurrence of a predetermined data
15 pattern within the wireless signals to be transmitted
16 predetermined data pattern further comprises:

17 detecting a signal sequence; or

18 detecting a signal sequence in combination with a
19 voltage, a current, or a combined voltage and current
20 exceeding a threshold either instantaneously or for a
21 specified duration.

1 15. The method as set forth in Claim 14 wherein the
2 step of detecting a signal sequence in combination with a
3 voltage, a current, or a combined voltage and current
4 exceeding a threshold either instantaneously or for a
5 specified duration is performed by the at least one
6 monitoring unit.

1 16. The method as set forth in Claim 11 wherein the
2 step of employing at least one control unit to lower an
3 output power level of the power amplifier for a specified
4 period in response to occurrence of the predetermined data
5 pattern within the wireless signals to be transmitted
6 further comprises:

 lowering the output power by a defined increment.

1 17. The method as set forth in Claim 11 wherein the
2 step of employing at least one control unit to lower an
3 output power level of the power amplifier for a specified
4 period in response to occurrence of the predetermined data
5 pattern within the wireless signals to be transmitted
6 further comprises:

 lowering the output power by adjusting a power
8 control reference voltage.

1 18. The method as set forth in Claim 11 further
2 comprising:

3 generating the wireless signals to be transmitted
4 with a baseband modulator; and

5 controlling timing of transmission of the
6 wireless signals to be transmitted with a transmission
7 line-up unit,

8 wherein the at least one monitoring unit and the
9 at least one control unit are each located in one or more
10 of the power amplifier, the voltage converter, the baseband
11 modulator, and the transmission line-up unit.

12 19. The method as set forth in Claim 18 wherein the
13 steps of detecting occurrence of a predetermined data
14 pattern within the wireless signals to be transmitted or
15 employing at least one control unit to lower an output
16 power level of the power amplifier for a specified period
17 in response to occurrence of the predetermined data pattern
18 within the wireless signals to be transmitted are performed
19 by more than one of the power amplifier, the voltage
20 converter, the baseband modulator, and the transmission
21 line-up unit.

1 20. The method as set forth in Claim 11 wherein the
2 step of amplifying wireless signals to be transmitted with
3 a power amplifier further comprises:

4 employing a power amplifier specified for average
5 output power at a maximum power level rather than absolute
6 maximum peak power at the maximum power level.